

Topic: Quotient rule for exponents**Question:** Simplify the expression.

$$\frac{x^9}{x^7}$$

Answer choices:

A x^{16}

B x^{63}

C x^3

D x^2



Solution: D

The quotient rule for exponents tells us that

$$\frac{x^a}{x^b} = x^{a-b}$$

In other words, because the numerator and denominator have the same base x , we can subtract the exponent in the denominator from the exponent in the numerator.

$$\frac{x^9}{x^7}$$

$$x^{9-7}$$

$$x^2$$



Topic: Quotient rule for exponents**Question:** Simplify the expression.

$$\frac{(x^{a+3})^2}{x^{3-a}}$$

Answer choices:

A x^{a+3}

B x^{3a+3}

C x^{3a+1}

D x^{a+1}



Solution: B

The power rule for exponents tells us that

$$(x^a)^b = x^{ab}$$

We'll apply this rule to the expression in the numerator of the fraction, and then we'll simplify the numerator before dividing it by the denominator.

$$\frac{(x^{a+3})^2}{x^{3-a}}$$

$$\frac{x^{(a+3)(2)}}{x^{3-a}}$$

$$\frac{x^{2a+6}}{x^{3-a}}$$

The quotient rule for exponents tells us that

$$\frac{x^a}{x^b} = x^{a-b}$$

Applying this to our fraction, we get

$$x^{(2a+6)-(3-a)}$$

$$x^{2a+6-3+a}$$

$$x^{3a+3}$$



Topic: Quotient rule for exponents**Question:** Simplify the expression.

$$\frac{x^m}{x^n}$$

Answer choices:

- A x^{mn}
- B x^{nm}
- C x^{2m2n}
- D x^{m-n}



Solution: D

To use the quotient rule for exponents, we need to make sure we have like bases between our terms in both the numerator and denominator. In the fraction

$$\frac{x^m}{x^n}$$

the base of the term in the numerator is x , and the base of the term in the denominator is x , so we have like bases. Which means we can apply quotient rule, and subtract the exponents. The exponent in the denominator gets subtracted from the exponent in the numerator.

$$x^{m-n}$$

